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NEW LAND MOLLUSCA FROM JAPAN AND THE LOO CHOO ISLANDS.

BY HENRY A. PILSBRY.

The collectors sent out by Mr. Hirase in the early months of this year have already transmitted much new and valuable material, in the study of which it is my privilege to assist. As Mr. Hirase desires to supply such species as have been collected in copious quantity to his correspondents in America and Europe, the prompt publication of full descriptions of the novelties is necessary to avoid the inconvenience attending the publicity of manuscript names. The full report, with figures of the new forms, may best be deferred until the results of the season's collecting can be presented in connected form. Most of the following species are from Kunchan, the northern and least settled province of the island Okinawa, or Great Luchu (Loo Choo), and from Oshima, hitherto unexplored for land mollusks.

Trochomorpha horiomphala (Pfr.).

Specimens have been sent by Mr. Hirase (No. 631) from Kunchan, the northern province of Okinawa. They are more depressed than Pfeiffer's type, but there is considerable variation in the species in this respect. *Trochomorpha Fritzei* Bttg. is a synonym. No definite locality has been known hitherto for Pfeiffer's species, which, moreover, has been lost, so to speak, in the group *Plectotropis*. It was doubtless this error of classification which led Boettger to redescribe the shell as *T. Fritzei*.

Trochomorpha Gouldiana n. sp.

Shell low-conic above, convex beneath, umbilicate, the umbilicus one-fourth the diameter of the shell, broadly open to the apex; of a dark reddish brown color, glossy; delicately striate, the striæ cut into minute granules by finer, very shallow spiral striæ, both above and below. Spire straightly conic, the apex slightly obtuse. Whorls $6\frac{1}{2}$, slowly widening, slightly convex below, and slightly concave above each suture; the last whorl acutely carinate, concave above and below the keel; base convex in the middle,

the margin of the umbilicus abrupt but not keeled. Aperture small, rhombic, the peristome simple, obtuse and whitish in fully adult specimens. Alt. 5.3, diam. 12.7 mm

Oshima (Mr. Y. Hirase, No. 650).

This species differs widely from *T. cathartæ* (Rve.) and *T. hori-omphala* (Pfr.), the two species known from the Loo Choo group, in its higher spire and less spreading form. It is closely related to *T. Shermani* (Pfr.) of Formosa, but differs in being smaller, with straightly conic spire, the whorls concave above keel and suture, and the aperture narrower, less rounded below.

It is named in honor of Dr. A. A. Gould, who described the Japanese shells collected by the Ringgold and Rogers Expedition. I find two specimens in the collection of the Academy, labeled "*H. hori-omphala* Pfr. Oosima."

Macrochlamys perfragilis n. sp.

Shell perforate, depressed, excessively thin, transparent, pale yellow, fragile. Surface brilliantly glossy, with faint growth-lines and almost obsolete, scarcely perceptible spiral striae. Spire low-conic. Whorls $4\frac{1}{2}$, somewhat convex, rather slowly widening, separated by a narrowly margined suture, the last whorl much wider, rounded at the periphery, rather convex beneath, narrowly impressed around the perforation. Aperture very broadly lunate, somewhat oblique, the lip fragile, columellar margin with a short, triangular reflection partially concealing the perforation.

Alt. 10, greater diam. 18, lesser 15 mm.

Alt. $8\frac{1}{2}$, greater diam. 16, lesser $14\frac{1}{2}$ mm.

Kunchan, Okinawa (Mr. Y. Hirase, No. 637).

A capacious, very fragile species, somewhat like *M. Stearnsi* Pils. of China, and quite different from anything yet described from Japan or the Loo Choo group.

Macrochlamys Gudei n. sp.

Shell minutely perforate, depressed-conoidal, thin, somewhat translucent, corneous-brown. Surface glossy, sculptured with weak growth-wrinkles, and on the base some coarse but shallow and inconspicuous spiral sulci, obsolete in places. Spire conic; whorls $6\frac{3}{4}$, rather strongly convex, slowly widening, the last wider, subangular at the periphery, the angle obvious in front, but disappearing near the aperture. Base convex, sunken around the

perforation. Aperture lunate, the lip simple and thin, columellar margin hardly thickened, dilated above, a triangular reflection partially covering the perforation.

Alt. 7, diam. 10 mm.

Kunchan, Okinawa (Mr. Y. Hirase, No. 635).

This species has about the size, form and appearance of the American *Gastrodonta ligera* (Say), though the whorls are more convex and less striate above, and there is, of course, no callus lining the basal part of the interior. The generic position assigned is somewhat doubtful.

It is named in honor of my friend G. K. Gude, who has produced several meritorious papers upon Japanese land snails.

Kaliella borealis n. sp.

Shell minutely perforate, pyramidal with slightly convex lateral outlines and flattened base, thin, corneous-brown. Surface somewhat shining, sculptured above with regularly spaced, very delicate whitish hair-like striæ, the base showing fine spiral striæ, and except near the periphery, minutely but rather roughly pitted. Whorls 7, nearly flat, the suture but slightly impressed, narrowly margined; the last whorl acutely carinate. Aperture rhombic, the peristome thin and fragile, columellar margin abruptly dilated and reflexed partly over the perforation.

Alt. $3\frac{3}{4}$, diam. $3\frac{1}{4}$ mm.

Kayabe, Ojima, Hokkaido Island (Mr. Y. Hirase, No. 641).

A rather straightly pyramidal species, distinct from any of the numerous species known to me from Hondo.

Eulota (Euhadra) oshimæ n. sp.

Shell globose-subdepressed, umbilicate, rather thin but solid, of a rich reddish chestnut color, darker within the umbilicus and on the back of the lip, and with a very dark chestnut, almost black band just above the periphery, bordered above and below with greenish-yellow bands; the convexity of the base sometimes fading to the same pale tint. Surface rather glossy, but in part dull, sculptured with slight growth-striæ only; several inner whorls, after the apical one, minutely wrinkled and marked with points in oblique lines. Spire conic, more or less elevated. Whorls varying from $6\frac{3}{4}$ in large to $5\frac{3}{4}$ in small specimens, quite convex, slowly widening, the last rounded at the periphery, very slightly and

slowly descending in front, convex beneath. Aperture broadly lunate, slightly oblique, bluish and showing the band inside; peristome expanded and rather narrowly reflexed, thickened within, purple, with the extreme edge pale; columellar margin broadly dilated, very dark, half covering the umbilicus.

Alt. 35, diam. 43 mm.

Alt. 29, diam. 37 mm.

Alt. 26, diam. 33 mm.

Alt. 25, diam. 32 mm.

Alt. $20\frac{1}{2}$, diam. 27 mm.

Alt. $19\frac{1}{2}$, diam. 26 mm.

Oshima, (Mr. Y. Hirase, No. 357).

This magnificent species is related to both *E. caliginosa*¹ and *E. mercatoria*,² but is more globose than either, with more convex whorls. It differs conspicuously from *E. caliginosa* in having the base of the shell and aperture rounded, not conspicuously flattened, as they are in *caliginosa*. The basal lip, moreover, is not sinuous. *E. oshimæ* resembles *E. mercatoria* in the form of the aperture, but differs in being more globose, with a larger umbilicus in shells of the same size, and the whorls are more convex.

The variation in size, as shown by the above measurements, is extraordinary, but there seems to be a complete series of intermediate specimens. The smaller shells are those most resembling *E. mercatoria*. *E. oshimæ* is thus related to species of Okinawa, and not to the *luchuana* group of Japan proper.

Chlorites eucharistus n. sp.

Shell umbilicate, thin, concave above, of a rich, dark chestnut color. Densely hairy, the hairs long, regularly arranged in diagonal lines descending forwardly and backward, the surface between them minutely papillose. Whorls $4\frac{1}{2}$, the earlier ones forming a rather deeply sunken spire, the last third of the last whorl deeply descending to the periphery, the whorl preceding this coiled in a plane. The first whorl is glossy and smooth; the last whorl widens toward the aperture, and is obscurely gibbous and then contracted behind the lip; the base convex, having a small excavation behind the basal lip, producing a low prominence just within the basal margin of the aperture. Aperture very oblique,

¹ *Catal. Marine Moll. Japan*, Pl. 10, figs. 1-3, 6.

² *Ibid.*, fig. 5.

very broadly lunate; peristome rather narrowly reflexed, purple, the margins somewhat approaching, connected across the parietal wall by a slender, raised cord.

Alt. 9, greater diam. 19, lesser $15\frac{1}{2}$ mm.

Alt. $9\frac{1}{2}$, greater diam. 18, lesser 15 mm.

Alt. $7\frac{1}{2}$, greater diam. 15, lesser 12 mm. (small form).

Oshima, (Mr. Y. Hirase, No. 354).

This fine species has the sunken spire of the typical forms of the genus from the Moluccas, etc. It is a larger and much finer species than the two hitherto described from Japan, *C. oscitans* (Martens) and *C. fragilis* Gude, neither of which has the well-developed peristome of *C. eucharistus*. Three of the specimens sent are of about the same size, but another is conspicuously smaller, with the spire perceptibly more sunken, and the low "tooth" within the basal margin of the peristome is subobsolete.

Succinea Hirasei n. sp.

A species grouping with *S. pfeifferi* of Europe and *S. retusa* of America. Elongate, fragile, reddish or corneous, amber-colored, composed of $2\frac{1}{2}$ very rapidly enlarging whorls, the last one very large, roughened by rather coarse growth-wrinkles. Aperture long-ovate, somewhat effuse below, the margins regularly arcuate.

Length 16, diam. 9, longest axis of aperture 13, width $6\frac{1}{2}$ mm.

Tsuchiura, Hitachi, in eastern Hondo (Mr. Y. Hirase, No. 642).

Both of the Succineas previously known from Japan, *S. lauta* Gld. and *S. horticola* Reinh., belong to the group of species having very convex whorls, like *S. putris* or *S. obliqua*. This new one goes with the lengthened species, and is very like *S. retusa* Lea (*ovalis* Gld.), but the Japanese form is rather less effuse than the American.

Cyclophorus Hirasei n. sp.

Shell narrowly umbilicate, turbate, with elevated spire, solid; greenish yellow, with a rather wide black belt just below the periphery, which is marked with a pale belt, and several dark lines and bands beneath, more or less interrupted at short intervals; the upper surface marked with numerous dark bands, interrupted obliquely or in zigzag fashion; the bands retaining their distinctness or more or less confluent into zigzag stripes. Whorls $5\frac{1}{2}$ to

nearly 6, very convex, the last flattened below the suture, elsewhere well rounded. Aperture circular, somewhat oblique, bluish and showing the bands inside; peristome rather narrowly reflexed, its face rounded, faintly red-tinted or bright red, continued in a callus across the very short parietal wall; the columellar margin overhanging and partially concealing the small umbilicus.

Alt. 30, diam. 32 mm.; antero-posterior diameter of aperture 21, width $19\frac{1}{2}$ mm.

Alt. 29, diam. 31 mm.; antero-posterior diameter of aperture $20\frac{1}{2}$, width 19 mm.

Operculum circular, multispiral, concave externally; diam. $15\frac{1}{2}$ mm.

Oshima, (Mr. Y. Hirase, No. 644).

Related to *C. jourdyi* Morl., *fulguratus* Pfr., *courbeti* Anc., and their allies, species of Tonquin and Burma. It is remarkable for its elevated spire and brilliant peristome.

Pupinella oshimæ n. sp.

Shell pupiform, dark purplish brown under a papery whitish outer color, apparently the result of weathering, densely and finely striate when unworn. Whorls 6, slightly convex, the first four forming a conic spire, the penultimate and last whorls of about equal diameter; last whorl somewhat produced forward below. Aperture vertical, the opening small and circular; peristome broadly reflexed, white or nearly so, very heavily thickened on the face, produced forward in a flange around the opening, interrupted by minute channels at the base of the columella and posterior end of the lip, these channels expanding funnel-like outwardly; parietal callus very strong at its right end, emitting a branch which rises high above the termination of the outer lip.

Length 10, diam. 4.8 mm.; diam. of aperture, inside of peristome, 2.2 mm.

Oshima (Mr. Y. Hirase, No. 645).

This species differs strongly from *P. rufa* Sowb. and its slightly differentiated local forms *fruhstorferi* and *tsushimaana*, in the relatively enormous development of the peristome, reducing the opening of the aperture; in the vertical, not oblique plane of the aperture, and especially in having the tongue of the parietal callus defining the posterior canal, very much longer, rising high above the termination of the outer lip. The latter is abruptly truncated

on a level with the suture, not produced upward, as in the other species mentioned. The upper foramen of the lip shows from in front as a slit, not an orifice, as in *P. rufa*.

P. fruhstorferi and *tsushimana*, from Iki Island and Tsushima respectively, are hardly distinguishable from *rufa*. With a series of *P. rufa* before me from Kobe, Awaji, Hyuga province in Kiushiu, and other localities, and specimens of *fruhstorferi* and *tsushimana* Mlldff. received from Fruhstofer, I am unable to find any differential characters for Dr. von Möllendorff's supposed species and subspecies except their distribution. The deeply dissected western coast of Kiushiu indicates subsidence of an area long exposed to denudation, and points to the recent isolation of Tsushima and neighboring islands. Their fauna has much in common with Kiushiu, and, so far as we now know, but few special species strongly differentiated from those of the greater island.

DIPLOMMATINIDÆ.

The Japanese *Diplommatinidæ* fall into three groups: *D. pusilla* v. Mart. and its var. *omiensis* Pils. are sinistral forms, *pusilla* being placed in the genus *Palaina*, subgenus *Cylindropalaina* by Kobelt and Möllendorff;³ but their genera *Palaina* and *Diplommatina* seem to stand in need of some rearrangement, judging by the lists of species.

All of the other Japanese species apparently belong to the section *Sinica* of the genus *Diplommatina*, with the single exception of *D. turris*, which differs strongly from all other known Japanese species.

Diplommatina turris n. sp.

Shell minute, tapering-turreted, whitish; the last two whorls of about equal diameter, those above slowly tapering. Whorls $7\frac{1}{2}$ to 8, extremely convex, the first two smooth, the apex obtuse; the last whorl but slightly ascending in front. Surface regularly sculptured with rather widely spaced thread-like rib-striæ. Aperture subcircular, the columellar tooth hardly visible from in front, but seen in an oblique view in the aperture to be moderately strong; peristome narrowly expanded, its inner edge built forward beyond

³ *Catalog der gegenwärtig lebend bekannten Pneumonopomen*, p. 53.

the expansion; continued in an adnate callus across the parietal wall. Palatal fold short, to the left of the parietal callus.

Length 2.2, diam. 0.9 mm.

Oshima (Mr. Y. Hirase, No. 648).

This species is not related to any other form known from Japan or the Loo Choo group. The turreted shape, extremely convex whorls, and regular spaced rib-striae are its prominent features.

Diplommattina saginata n. sp.

Shell dextral, imperforate, shortly oblong-conic, obese, amber-colored or white, densely sculptured with delicate thread-like rib-striae, about 25 in the space of a millimeter on the penultimate whorl, slightly wider apart on the earlier whorls; no spiral striation. Penultimate whorl widest, those above forming a regularly conic spire. Whorls $6\frac{1}{2}$, the first obtuse and smooth; last whorl much smaller than the penultimate, strongly ascending in front. Aperture subcircular; columellar tooth strong, as usual. Peristome narrowly reflexed, thickened on the face, continuous in a delicate cord across the parietal margin. Palatal fold above the columella, rather long.

Length 2.3, diam. 1.2 mm.

Nase, Oshima (Mr. Y. Hirase, No. 649*b*); also Furuniga, Oshima (No. 649*a*).

A smaller, shorter species than *D. insularum* of Kunchan, Okinawa, or *D. cassa* of Hondo. In one specimen the outer lip is duplicate, in the others merely thickened. The upper margin of the peristome rises nearly to the preceding suture. A specimen from Furuniya measures, length 2.24, diam. 1.28 mm.

Diplommattina oshima n. sp.

Shell dextral, imperforate, bright red-amber colored, the penultimate whorl widest, those above regularly tapering, forming a long, *attenuated* spire. Whorls 7, convex, the first two or three dark red, smooth, the next two having *conspicuous thread-like, wide-spaced riblets*, the last two whorls densely sculptured with low, more delicate rib-striae; the last whorl somewhat contracted, ascending in front, gibbous on the base behind the columellar lip. Aperture circular, the peristome reflexed, not doubled, its inner edge a little thickened and built forward, scarcely continuous, the parietal callus

being but slightly developed. Columellar tooth strong, as usual. Palatal fold wanting.

Length 3, diam. 1.4 mm.

Oshima (Mr. Y. Hirase, No. 651).

This species has a longer, more attenuated spire than *D. luchuana*, and it differs from that and all other described Japanese species in the widely spaced riblets of the spire. Moreover, no palatal fold is seen through the front of the whorl, and upon opening a specimen I found it wanting.

***Diplommatina luchuana* n. sp.**

Shell small, dextral, oblong-conic, brown, finely striate, the striæ much less strong than in other described species of Japan or the Loo Choo Islands. Whorls 6, convex, the penultimate and last of about equal diameter, those above regularly tapering, forming a long, conic spire. Last whorl ascending to the aperture, constricted at its beginning in front. Aperture somewhat longer than wide, the left margin straightened; peristome continuous, the outer lip reflexed, duplicate by a narrow crest close behind it; columellar tooth strong; palatal fold very short. Length 2.3, diam. 1.15 mm.

Province of Kunchan, Okinawa (Loo Choo) Island (Mr. Y. Hirase, No. 629).

Decidedly conic above, as in the larger *D. Kobelti* Ehrm. The striation is weaker than in other Japanese species of the group, none of which, except *D. Kobelti*, have so tapering a spire. The palatal fold is shorter than in the other species of the region. The surface seems to have no spiral striæ between the longitudinal striæ.

***Diplommatina septentrionalis* n. sp.**

Shell dextral, corneous or pale brown, cylindric-oblong, finely rib-striate, about 12 striæ in the space of a millimeter on the penultimate whorl, the striæ more widely spaced on the last whorl; under a high magnification showing excessively minute, close, crenulated spiral striæ between the rib-striæ. Whorls nearly $6\frac{1}{2}$, convex, the first three forming a short terminal cone, the others wide, last whorl ascending to the aperture. Aperture subcircular, the lip continuous, reflexed, duplicate by a narrow crest close behind it; columellar tooth moderately strong; palatal fold rather long. Length 2.9, diam. 1.56 mm.

Kayabe, prov. Ojima, Hokkaido Island (Mr. Y. Hirase, No. 639).

This is one of the northernmost known species of the genus. It is somewhat larger than *D. uzenensis*, the rib-striæ are more widely spaced and under a high power there are fine, dense, spiral striæ, wanting in *D. uzenensis*. *D. cassa* is somewhat more cylindric, with finer striation.

D. pusilla Mart. also occurs at Kayabe, Ojima, whence specimens have been sent by Mr. Hirase. They measure 2.1 mm. long, 1 wide, and have about 11 or 12 riblets in the space of a millimeter, measured on the last or penultimate whorls. The surface between the riblets has excessively fine spiral striæ, and I find that these are present in var. *omiensis*, as well as in what I take to be typical *D. pusilla*, although I overlooked them on the occasion of a former examination.⁴ I cannot see that the specimens from Hokkaido Island differ from those of middle Hondo.

⁴ These *Proceedings* for 1900, p. 382.